

No.

9000146



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Asgrow Seed Company

Whereas, THERE HAS BEEN PRESENTED TO THE
Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT (T. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

SOYBEAN

'A2396'



In Testimony Whereof, I have hereunto set
my hand and caused the seal of the Plant
Variety Protection Office to be affixed
at the City of Washington, D.C.
this 31st day of August in
the year of our Lord one thousand nine
hundred and ninety-two.

Attest:

Kenneth A. Evans
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Edward Madison
Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE (Instructions on reverse)

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) (as it is to appear on the Certificate) Asgrow Seed Company		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NO. XP2396	3. VARIETY NAME A2396
4. ADDRESS (street and no. or R.F.D. no., city, state, and ZIP) Gull Road, Bldg. 190 Kalamazoo, MI 49001		5. PHONE (include area code) (616)384-2352	FOR OFFICIAL USE ONLY PVPO NUMBER 9000146 Date Apr. 12, 1990 Time <input type="checkbox"/> A.M. <input type="checkbox"/> P.M. Filing and Examination Fee: \$ 2150 Date April 9, 1990 Certificate Fee: \$ 250.- Date Mar. 6, 1992
6. GENUS AND SPECIES NAME Glycine max.	7. FAMILY NAME (Botanical) Leguminosae		
8. CROP KIND NAME (Common Name) Soybean	9. DATE OF DETERMINATION September, 1985		
10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.) Corporation			
11. IF INCORPORATED, GIVE STATE OF INCORPORATION Delaware		12. DATE OF INCORPORATION March 22, 1968	

13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS
Steve Hawkins 9638-190-23
Asgrow Seed Company
Gull Road, Bldg. 190
Kalamazoo, MI 49001
 PHONE (include area code): **(616) 384-2352**

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow INSTRUCTIONS on reverse)

- a. ☒ Exhibit A, Origin and Breeding History of the Variety.
- b. ☒ Exhibit B, Novelty Statement.
- c. ☒ Exhibit C, Objective Description of Variety.
- d. ☒ Exhibit D, Additional Description of Variety.
- e. ☒ Exhibit E, Statement of the Basis of Applicant's Ownership.
- f. ☐ Seed Sample (2,500 viable untreated seeds). Date Seed Sample mailed to Plant Variety Protection Office _____
- g. ☒ Filing and Examination Fee (\$2,150) made payable to "Treasurer of the United States."

15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See section 83(a) of the Plant Variety Protection Act.)
☐ YES (If "YES," answer items 16 and 17 below) ☒ NO (If "NO," skip to item 18 below)

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?
☐ YES ☐ NO

17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?
☐ FOUNDATION ☐ REGISTERED ☐ CERTIFIED

18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.?

- ☐ YES (If "YES," through ☐ Plant Variety Protection Act ☐ Patent Act Give date _____)
- ☒ NO

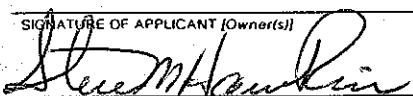
19. HAS THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETING IN THE U.S. OR OTHER COUNTRIES?

- ☐ YES (If "YES," give names of countries and dates)
- ☒ NO

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in section 41, and is entitled to protection under the provisions of section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT [Owner(s)] 	CAPACITY OR TITLE Soybean Product Manager	DATE 3/27/90
SIGNATURE OF APPLICANT [Owner(s)]	CAPACITY OR TITLE	DATE

Asgrow Seed Company
Plant Variety Protection Application - Soybean, A2396
March 6, 1990

EXHIBIT A

ORIGIN AND BREEDING HISTORY OF A2396

- 1983 J83925 Cross was made.
Parentage: CM214 * A2943
- 1983-84 J83925 F1 and F2 generations advanced at Isabela, Puerto Rico.
(winter)
- 1984 J83925 F3 generation advanced in Ames, Iowa. One hundred forty-four plants were selected from the bulk population and threshed individually.
- 1984-85 Individual plants of J83925 were screened in the (winter) greenhouse for Race 1 phytophthora root rot, susceptibles were discarded.
- 1985 J83925 F4 single plants were evaluated as F5-derived lines in progeny rows. J83925 J85-15786 was selected for its uniformity, and standability. This row was harvested in bulk and seeds were checked and verified for uniform seed coat luster and hilum color.

It was in September, 1985, that J83925 J85-15786 was determined to be a stable and unique line.
- 1986 J83925 J85-15786 was entered in yield trials at three locations in Iowa. It was selected for its yield, uniformity and standability.
- 1987 J83925 J85-15786 was entered in yield tests which were grown at nine midwest locations. It finished first out of 50 entries in the test, and was selected for its yield, uniformity and standability.
- 1988 J83925 J85-15796 was entered in yield tests which were grown at 20 locations through out the midwest. It finished first out of 20 entries in the test, and was selected for its yield, uniformity and standability.

J83925 J85-15786 was given the maturity designation XP2396.

Breeder seed was produced.

Exhibit A continued ...

1989 XP2396 was nominated for release and full production and assigned the designation A2396.

Foundation seed of A2396 was produced near Perry, Iowa.

A2396 is uniform and stable within commercially acceptable limits based on trail observations since its development in 1985. As with other soybean varieties, variants can occur for almost any characteristic during the course of repeated sexual reproduction.

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EXHIBIT B

Novelty Statement Concerning A2396 Soybean

To our knowledge the soybean varieties that most closely resemble A2396 are: A2943, AP2190, AP2324, CX265

Characteristics which differentiate A2396 include, but are not necessarily restricted to, the following:

1. Peroxidase Activity

A2396	= Low
A2943	= High
AP2190	= High
AP2324	= Low

2. Reaction to race 1 of Phytophthora megasperma Drechs. f. sp. glycinea

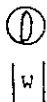
A2396	= Resistant
CX265	= Susceptible
AP2324	= Susceptible

OBJECTIVE DESCRIPTION OF VARIETY
 SOYBEAN (*Glycine max* L.)

NAME OF APPLICANT(S) Asgrow Seed Company	TEMPORARY DESIGNATION XP2396	VARIETY NAME A2396
ADDRESS (Street and No., or R.F.D. No., City, State, and Zip Code) Gull Road, Bldg. 190 Kalamazoo, MI 49001		FOR OFFICIAL USE ONLY PVPO NUMBER 9000146

Choose the appropriate response which characterizes the variety in the features described below. When the number of significant digits in your answer is fewer than the number of boxes provided, place a zero in the first box when number is 9 or less (e.g.,). Starred characters ★ are considered fundamental to an adequate soybean variety description. Other characters should be described when information is available.

1. SEED SHAPE:



1 = Spherical (L/W, L/T, and T/W ratios = < 1.2)
 3 = Elongate (L/T ratio > 1.2; T/W = < 1.2)

2 = Spherical Flattened (L/W ratio > 1.2; L/T ratio = < 1.2)
 4 = Elongate Flattened (L/T ratio > 1.2; T/W > 1.2)

★ 2. SEED COAT COLOR: (Mature Seed)

1 = Yellow 2 = Green 3 = Brown 4 = Black 5 = Other (Specify) _____

3. SEED COAT LUSTER: (Mature Hand Shelled Seed)

1 = Dull ('Corsoy 79'; 'Braxton') 2 = Shiny ('Nebsoy'; 'Gasoy 17')

★ 4. SEED SIZE: (Mature Seed)

Grams per 100 seeds

★ 5. HILUM COLOR: (Mature Seed)

1 = Buff 2 = Yellow 3 = Brown 4 = Gray 5 = Imperfect Black 6 = Black 7 = Other (Specify) _____

★ 6. COTYLEDON COLOR: (Mature Seed)

1 = Yellow 2 = Green

★ 7. SEED PROTEIN PEROXIDASE ACTIVITY:

1 = Low 2 = High

★ 8. SEED PROTEIN ELECTROPHORETIC BAND:

1 = Type A (SP1^a) 2 = Type B (SP1^b)

★ 9. HYPOCOTYL COLOR:

1 = Green only ('Evans'; 'Davis') 2 = Green with bronze band below cotyledons ('Woodworth'; 'Tracy')
 3 = Light Purple below cotyledons ('Beeson'; 'Pickett 71')
 4 = Dark Purple extending to unifoliate leaves ('Hodgson'; 'Coker Hampton 266A')

★ 10. LEAFLET SHAPE:

1 = Lanceolate 2 = Oval 3 = Ovate 4 = Other (Specify) _____

11. LEAFLET SIZE:

1 = Small ('Amsoy 71'; 'A5312')
3 = Large ('Crawford'; 'Tracy')

2 = Medium ('Corsoy 79'; 'Gasoy 17')

12. LEAF COLOR:

1 = Light Green ('Weber'; 'York')
3 = Dark Green ('Gnome'; 'Tracy')

2 = Medium Green ('Corsoy 79'; 'Braxton')

★ 13. FLOWER COLOR:

1 = White

2 = Purple

3 = White with purple throat

★ 14. POD COLOR:

1 = Tan

2 = Brown

3 = Black

★ 15. PLANT PUBESCENCE COLOR:

1 = Gray

2 = Brown (Tawny)

16. PLANT TYPES:

1 = Slender ('Essex'; 'Amsoy 71')
3 = Bushy ('Gnome'; 'Govan')

2 = Intermediate ('Amcor'; 'Braxton')

★ 17. PLANT HABIT:

1 = Determinate ('Gnome'; 'Braxton')

2 = Semi-Determinate ('Will')

3 = Indeterminate ('Nebsoy'; 'Improved Pelican')

★ 18. MATURITY GROUP:

1 = 000

2 = 00

3 = 0

4 = I

5 = II

6 = III

7 = IV

8 = V

9 = VI

10 = VII

11 = VIII

12 = IX

13 = X

★ 19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

BACTERIAL DISEASES:

★ Bacterial Pustule (*Xanthomonas phaseoli* var. *sojensis*)★ Bacterial Blight (*Pseudomonas glycinea*)★ Wildfire (*Pseudomonas tabaci*)

FUNGAL DISEASES:

★ Brown Spot (*Septoria glycines*)Frogeye Leaf Spot (*Cercospora sojina*)★

Race 1

Race 2

Race 3

Race 4

Race 5

Other (Specify)

Target Spot (*Corynespora cassiicola*)Downy Mildew (*Peronospora trifoliorum* var. *manshurica*)Powdery Mildew (*Microsphaera diffusa*)★ Brown Stem Rot (*Cephalosporium gregatum*)Stem Canker (*Diaporthe phaseolorum* var. *caulivora*)

FUNGAL DISEASES: (Continued)

- ★ ☐ 0 Pod and Stem Blight (*Diaporthe phaseolorum* var. *sojae*)
- ☐ 0 Purple Seed Stain (*Cercospora kikuchii*)
- ☐ 0 Rhizoctonia Root Rot (*Rhizoctonia solani*)
- Phytophthora Rot (*Phytophthora megasperma* var. *sojae*)
- ★ ☐ 2 Race 1 ☐ 2 Race 2 ☐ 1 Race 3 ☐ 1 Race 4 ☐ 1 Race 5 ☐ 0 Race 6 ☐ 1 Race 7
- ☐ 1 Race 8 ☐ 1 Race 9 ☐ 2 Other (Specify) Race 10, 11, 13, 16, 17

VIRAL DISEASES:

- ☐ 0 Bud Blight (Tobacco Ringspot Virus)
- ☐ 0 Yellow Mosaic (Bean Yellow Mosaic Virus)
- ★ ☐ 0 Cowpea Mosaic (Cowpea Chlorotic Virus)
- ☐ 0 Pod Mottle (Bean Pod Mottle Virus)
- ★ ☐ 0 Seed Mottle (Soybean Mosaic Virus)

NEMATODE DISEASES:

- Soybean Cyst Nematode (*Heterodera glycines*)
- ★ ☐ 0 Race 1 ☐ 0 Race 2 ☐ 0 Race 3 ☐ 0 Race 4 ☐ 0 Other (Specify) _____
- ☐ 0 Lance Nematode (*Hoplaimus Colombus*)
- ★ ☐ 0 Southern Root Knot Nematode (*Meloidogyne incognita*)
- ★ ☐ 0 Northern Root Knot Nematode (*Meloidogyne Hapla*)
- ☐ 0 Peanut Root Knot Nematode (*Meloidogyne arenaria*)
- ☐ 0 Reniform Nematode (*Rotylenchulus reniformis*)
- ☐ 0 OTHER DISEASE NOT ON FORM (Specify): _____

20. PHYSIOLOGICAL RESPONSES: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

- ★ ☐ 0 Iron Chlorosis on Calcareous Soil
- ☐ 0 Other (Specify) _____

21. INSECT REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

- ☐ 0 Mexican Bean Beetle (*Epilachna varivestis*)
- ☐ 0 Potato Leaf Hopper (*Empoasca fabae*)
- ☐ 0 Other (Specify) _____

22. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED.

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant Shape	A2943	Seed Coat Luster	A2943
Leaf Shape	A2943	Seed Size	A2943
Leaf Color	A2943	Seed Shape	A2943
Leaf Size	AP2190	Seedling Pigmentation	A1937

23. GIVE DATA FOR SUBMITTED AND SIMILAR STANDARD VARIETY: Paired Comparison Data

VARIETY	NO. OF DAYS MATURITY	PLANT LODGING SCORE	CM PLANT HEIGHT	LEAFLET SIZE		SEED CONTENT		SEED SIZE G/100 SEEDS	NO. SEEDS/ POD
				CM Width	CM Length	% Protein	% Oil		
A2396 Submitted	130	1.5	107	9.2	13.7	41.5	22.4	15	
AP2190 Name of Similar Variety	130	3.0	102	9.2	13.9	44.3	21.8	19	

PUBLICATIONS USEFUL AS REFERENCE AIDS FOR COMPLETING THIS FORM:

1. Caldwell, B.E., ed. 1973. Soybeans: Improvement, Production, and Uses. Amer. Soc. Agron. Monograph No. 16.
2. Buttery, B.R. and R.I. Buzzell. 1968. Peroxidase activity in seeds of soybean varieties. Crop Sci., 8: 722-725.
3. Hymowitz, T. 1973. Electrophoretic analysis of SBTI-A₂ in the USDA soybean germplasm collection. Crop Sci., 13: 420-421.
4. Payne, R.C. and L.F. Morris. 1976. Differentiation of soybean cultivars by seedling pigmentation patterns. J. Seed Technol. 1: 1-19.

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EXHIBIT D

Additional Description of the Variety

A2396 is a early Maturity Group II cultivar that possesses exceptional yield potential, excellent standability, and outstanding phenotypic appearance.

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EXHIBIT E

STATEMENT OF THE BASIS OF APPLICANTS'S OWNERSHIP

A2396 was originated and developed by James E. Miller, Ph.D., an Asgrow plant breeder. By agreement between employee and Asgrow Seed Company, all rights to any invention, discovery, or development made by an employee are assigned to the Company. No rights to such invention, discovery, or development are retained by the employee.